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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/552,753

11/17/2005

Sung-Wook Song

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EXAMINER

WU, IVES J

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

12/17/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/552,753	Applicant(s) SONG, SUNG-WOOK	
	Examiner IVES WU	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 October 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/11/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

(1). The drawings are objected to under 37 CFR 1.83(a) because they fail to show protrusion part 141b as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(2). **Claims 1, 5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiu et al (US 5753000A) in view of Davis et al (US 5435817A) and Etani et al (US 3954921).

As to a cylindrical body fixed to a bottom circular disc wherein an entire appearance of the same is formed of a grill part in an air cleaner in **independent claim 1**, Chiu et al (US 5753000A) disclose filter air cleaner (Title). A portable air cleaner having a cylindrical filter element mounted on a circular base and encased by cylindrical cover (Abstract, line 1-3). As illustrated in the Figure below, additional air inlet openings 38 may be disposed about the circumference of side wall 34. It would be obvious to have an entire appearance to be formed of a grill part because of design choice. *MPEP* §§ 2144.04. As evidenced by Davis et al (US 5435817A) in Figure 2, which shows the entire circumference of air inlet grill.

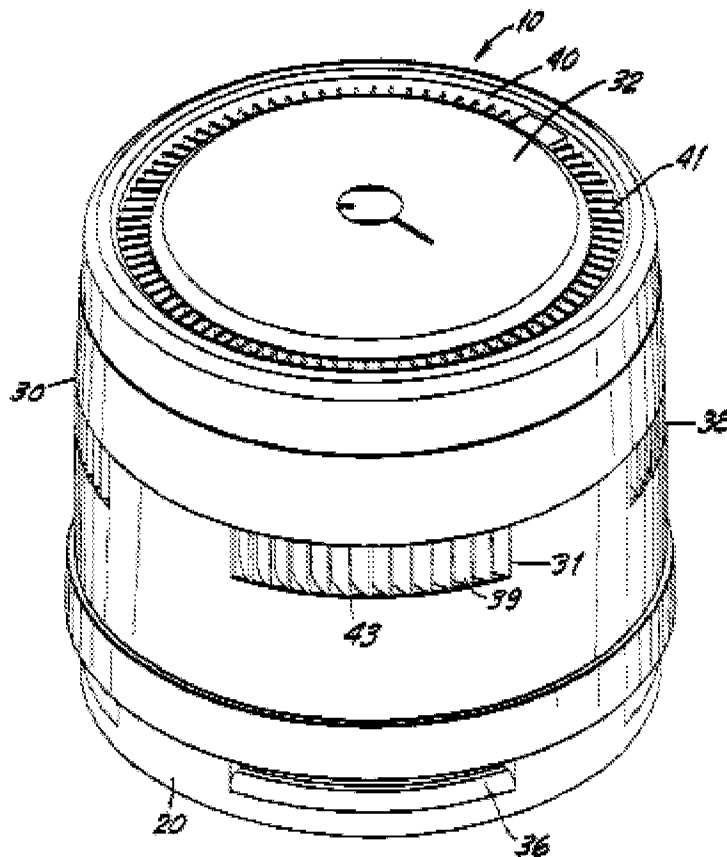


FIG. 1

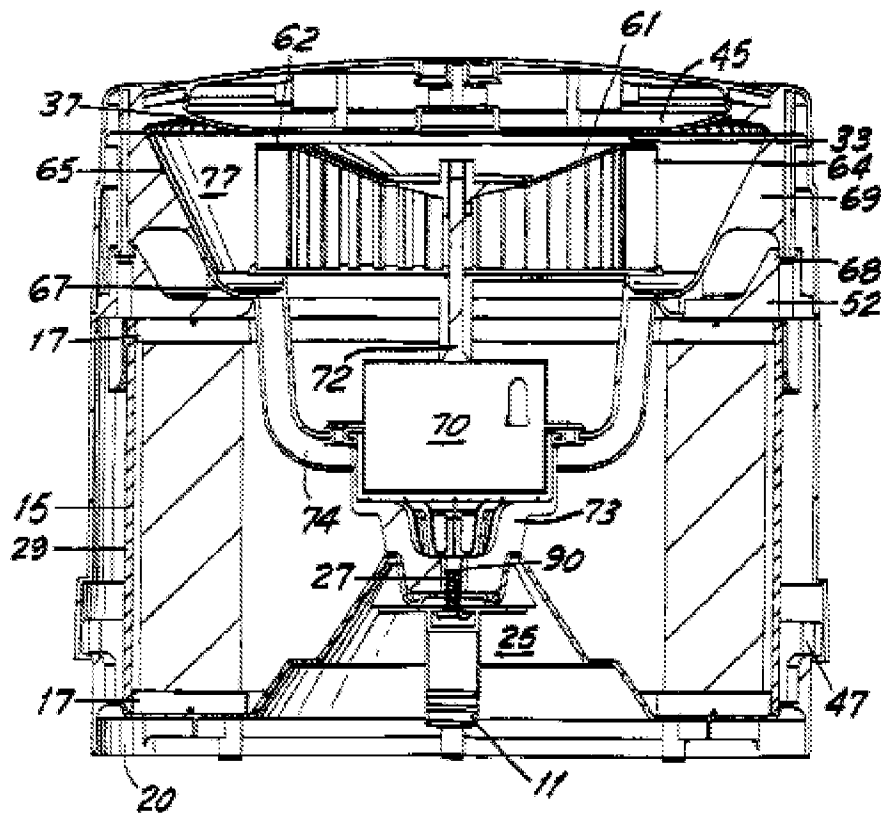


FIG. 7

As a filter unit including a non-woven fabric filter provided in an inner side of the grill part of the cylindrical body, and a cylindrical filter cartridge having a cylindrical wrinkle filter in an inner side in an air cleaner in **independent claim 1**, Chiu et al (US 5753000A) disclose HEPA filter element 15 is a hollow cylinder in configuration and comprises HEPA pleated paper 13 and annular disks 17 disposed at the ends of the cylinder which reads on the wrinkle filter. In a preferred embodiment, a removable pre-filter element 29 may be wrapped around the outer cylindrical surface of HEPA filter element 15. Pre-filter element 29 removes larger airborne particles from the air before such particles enter the HEPA filter element 15. More preferably, the pre-filter element 29 is formed from an inexpensive medium such as a charcoal impregnated open cell foam (Col. 2, line 47-59). Chiu et al **do not teach** the pre-filter to be non-woven fabric filter as claimed.

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However, Etani et al (US 3954621) **teach** filtration system having pre-filter and main filter (Title). It relates to filtration systems by which liquids or gases may be clarified in order to separate suspended constituents of a fluid from a filtrate and, more particularly, to filtration systems by which a liquid or gas may be cleansed of suspended particles by a filter medium, which transmits the fluid and captures the particles (Col. 1, line 9-13). Various fabrics and meshes, including stainless steel as pre-filter were also tested. It is concluded that mesh and fabric having the proper opening size can be used as pre-filter, as well as open-celled polymeric foam (Col. 6, line 53-56). Fabrics would include woven and non-woven.

In view of the recognizably functional equivalent fabrics filter (woven, non-woven), open-celled polymeric foam disclosed by Etani et al, it would be obvious to substitute the charcoal impregnated foam pre-filter disclosed by Chiu with fabrics (woven or non-woven) disclosed by Etani et al based on their interchangeability As functional equivalence as pre-filter in the air cleaner.

As to an air guide installed in the interior of the filter unit and having an air inlet part in a lower side wherein an upper side of the same is wide, and a lower side of the same is narrow like a reverse conical shape in an air cleaner in **independent claim 1**, Chiu et al (US 5753000A) disclose an air deflector dish redirecting the purified air through the exhaust openings disposed on the top surface of the cylindrical cover (Abstract, line 7-9). As shown in the Figure 3 and Figure 7, a central opening 66, air deflector 69 (65, 67) and the connection with support 74 forming the extension within the filter unit, which reads on the limitation of instant claim.

As to an air supply unit assembly including a support circular disc having an air hole and a protrusion part at a center for covering the upper sides of the cylindrical body, the filter unit and the air inlet guide, a motor fixed to the protrusion part of the support circular disc, a fan fixed to a rotary axis of the motor, and a fan housing having an air discharge hole formed along a rim of an upper side surface, while surrounding the fan in an air cleaner in **independent claim 1**, Chiu et al (US 5753000) disclose Figure 3 and 7, the arrangements for supporting plate 52, centrifugal fan 62, motor 70, central opening 66, exhaust opening 40, which reads on the limitations of instant claim.

As to a top housing assembled to an upper side surface of the air supply unit assembly and having a controller with an operation knob in an upper side surface, and a handle wherein a

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rotation discharge guide part corresponding to the air discharge hole is formed along the rim in an air cleaner in **independent claim 1**, Chiu et al (US 5753000) disclose in Figure 2 and 9, safety lid 89, on-off switch 83, rotation discharge guide part 40 formed along the rim. An locking handle 11 at the bottom, however, it would be obvious to have the handle in an upper side of the cleaner because of rearrangement of parts. *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975). as evidenced by Davis et al (US 5435817) that an operating handle 14 is in an upper side.

As to an electronic circuit substrate provided between an upper side of the air supply unit assembly and a lower surface of the top housing, an air cleaner in **independent claim 1**, Chiu et al (US 5753000) disclose in Figure 9, electric supply control means 82, electronic light bulb 84, which reads on the limitations of instant claim.

As to air supply unit assembly including an air guide member capable of guiding the air flowing from the air hole to the air discharge hole in the upper direction, not the bottom in **claim 5**, Chiu et al (US 5753000A) disclose the aid deflector dish 69 as shown in the Figure 7, which reads on the features of instant claim.

(3). **Claim 2** is rejected under 35 U.S.C. 103(a) as being unpatentable over Chiu et al (US 5753000A) in view of Davis et al (US 5435817A) and Etani et al (US 3954921), further in view of Marois (US 5441710A).

As to air supply assembly including a plurality of electric heaters in an inner side of the air discharge hole in claim 2, Chiu et al **do not teach** heaters as claimed.

However, Marois (US 5441710A) **teaches** air flow sterilizer (Title).. An air flow containing microorganisms including fungal spores is sterilized by heating the air flow to a sufficient temperature to weaken cellular walls of the microorganisms, inducing the turbulent flow (Abstract, line 1-4).

The advantage of heater is to weaken the cellular walls of the microorganisms so that microorganisms may hit and be destroyed at flow rate and turbulence level of the air flow (Abstract).

Therefore, it would have been obvious at time of the invention to install heater of Marois in the air cleaner of Chiu et al in order to attain the advantage cited above. Also, it would be

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obvious to have the heaters in inner side of the air discharge hole because of rearrangement of parts. *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975).

(4). **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over Chiu et al (US 5753000A) in view of Davis et al (US 5435817A) and Etani et al (US 3954921), further in view of Sekoguchi et al (US 7120006B2).

As to air supply unit assembly including a sensor cover part extended in a lower direction of one side wherein a dust density detection sensor to be provided in the interior of the sensor cover part in **claim 3**, Chiu et al **do not teach** dust density detection sensor as claimed.

However, Sekoguchi et al (US 7120006B2) **teach** ion generator and air conditioning apparatus (Title). It relates to ion generators that generate ions into the air, and air conditioning apparatuses incorporating such an ion generator, and examples of such apparatus include air conditioners, air purifiers, dehumidifiers, humidifiers, and fan heaters. Refrigerators also belong to the field of air conditioning apparatuses within the scope (Col. 1, line 16-25). In an ion generator, the detecting means is a sensor for detecting an air pollution level (Col. 4, line 6-8).

The advantage of pollution level sensor is possibly to perform the operation in an optimum operation mode according to the air pollution level (Col. 4, line 9-12).

Therefore, it would have been obvious at time of the invention to install pollution level sensor of Sekoguchi et al in the air cleaner of Chiu et al in order to attain the advantage cited above. Also, it would be obvious to have the sensor in the sensor cover part extended in a lower side in lower side because of rearrangement of parts. *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975).

(5). **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Chiu et al (US 5753000A) in view of Davis et al (US 5435817A) and Etani et al (US 3954921), further in view of Sekoguchi et al (US 7120006B2).and Conoscenti (US 5553587A).

As to air supply unit assembly having a gas density detection sensor in **claim 4**, the disclosure of Chiu et al, Davis et al, Etani et al, Sekoguchi et al is incorporated herein by reference, the most subject as currently claimed, has been recited in Applicant's claim 3, and has been discussed therein.

As to air supply assembly providing in the inner side of fan housing a temperature sensor in **claim 4**, Chiu et al do not teach temperature sensor as claimed.

However, Conoscenti (US 5553587A) teaches air cleaner housing (Title). The control module may receive temperature information from a temperature sensor (Col. 5, line 9-10).

The advantage of temperature sensor is the air flow to be optimized based on ambient temperature (Col. 5, line 12-13).

Therefore, it would have been obvious at time of the invention to temperature sensor of Conoscenti in the air cleaner of Chiu et al in order to attain the advantage cited above. Also, it would be obvious to have the temperature sensor, dust detection sensor in the sensor hole to be formed in inner side of fan housing because of rearrangement of parts. *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975).

(6). **Claims 6, 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiu et al (US 5753000A) in view of Davis et al (US 5435817A) and Etani et al (US 3954921), further in view of Goldstein (US 4210429).

As to a UV ray sterilizer having a pair of UV lamps on the bottom of the support circular disc in **claim 6**, Chiu et al **do not teach** the UV sterilizer as claimed.

However, Goldstein (US 4210419) **teaches** air purifier (Title). As shown in the Figure 2, there is a pair of UV lamp located at bottom of the air purifier.

The advantage of UV lamp in the air purifier is to kill viruses and bacteria (Col. 5, line 24-25).

Therefore, it would have been obvious at time of the invention to install the UV lamps of Goldstein in the air cleaner of Chiu et al in order to attain the above-cited advantage. It would be obvious to have the UV lamp of the support circular disk because of rearrangement of parts. *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975).

As to filter cartridge of the filter unit comprising a wrinkle filter and a carbon filter being adherent to the inner surface of the wrinkle filter in **claim 8**, Chiu et al **do not teach** carbon filter as claimed.

However, Goldstein (US 4210419) **teaches** air purifier (Title). It is to provide an air purifier having a plurality of filters, a filter for removing offensive odors and a pre-filter for

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filtering the larger particles from the air and in this way increasing the efficient light span of the main filter (Col. 1, line 40-44). Theis filter means preferably includes a main filter and a charcoal filter disposed above the main filter. The main filter is a special high efficiency filter referred to in the trade as a HEPA filter (Col. 2, line 43-45).

The advantage of carbon filter is to primarily remove odors from air (Col. 4, line 46-48).

Therefore, it would have been obvious at time of the invention to install carbon filter of Goldstein in the air cleaner of Chiu et al in order to attain the above-cited advantage.

(7). **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Chiu et al (US 5753000A) in view of Davis et al (US 5435817A) and Etani et al (US 3954921), further in view Brais (US 5833740A).

As to air inlet part comprising a radial wing part for guiding the flow of air to turbulence flow in claim 7, Chiu et al **do not teach** the turbulence flow at inlet by a radial wing part as claimed.

However, Brais (US 5833740A) **teaches** air purifier (Title). The turbulence generator is mounted within the housing downstream of the inlet. The vacuum UV source is mounted within the housing downstream of the turbulence generator (Abstract< line 6-7, 9-10). The turbulence generator is mounted at or downstream of the air inlet and includes deflective baffles oriented in such a manner as to generate turbulence in the air entering the housing through air inlet 22. The possible orientations of the baffles to generate air turbulence are believed well known in the art and will not be discussed further herein (Col. 7, line 34-40). The shape of turbulence generator reads on the radial wing part of instant claim.

The advantage of turbulence generator is to promote the dispersion and mixing of air received through the inlet and to reduce the production of ozone by increasing the contact between the mon-atomic oxygen and the chemical contaminants (Abstract, line 8-9, 14-16).

Therefore, it would have been obvious at time of the invention to install turbulence generator of Brais in the air cleaner of Chiu et al in order to attain the above-cited advantage.

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(8). **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over Chiu et al (US 5753000A) in view of Davis et al (US 5435817A) and Etani et al (US 3954921), further in view of Goldstein (US 4210429), Liu et al (US 7052532B1).

As to filter cartridge of filter unit including a wrinkle filter, a carbon filter being adherent to the inner surface of the wrinkle filter in **claim 9**, the disclosure of Chiu et al, Davis et al, Etani et al is incorporated herein by reference, the most subject matters as currently claimed, have been recited in Applicant's claim 8, and have been discussed therein.

As to a nano silver filter being adherent to the inner surface of carbon filter in **claim 9**, Chiu et al, Davis et al, Etani et al **do not teach** the nano-silver filter as claimed.

However, Liu et al (US 7052532B1) **teach** high temperature nanofilter system and method (Title). The fiber-based paper substrates may be used to support a number of different kinds of catalysts to assist in the oxidation of carbonaceous materials and in the reduction of other pollutants in the combustion device exhaust (Col. 43, line 56-60). Suitable catalytic materials can include materials comprising metals such as platinum, palladium, rhodium, iron, nickel, silver, ruthenium, copper or combinations (Col. 44, line 1-4).

The advantage of nano silver filter is to filter nanoparticles in hot gas (Abstract, line 1-2).

Therefore, it would have been obvious at time of the invention to install nano silver filter of Liu et al in the air cleaner of Chiu et al in order to attain the above-cited advantage. Also, it would be obvious to have nano silver filter being adherent to the inner surface of the carbon filter because of the rearrangement of parts. *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975).

(9). **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Chiu et al (US 5753000A) in view of Davis et al (US 5435817A) and Etani et al (US 3954921), further in view of Aron (US 3054245).

As to top housing including an ion generator wherein a discharge hose connected to the ion generator being exposed from one side of controller to the outside in **claim 10**, Chiu et al **do not teach** the ion generator as claimed.

However, Aron (US 3054245) **teaches** an electrostatic air cleaning device (Title). A further object is to provide an arrangement for producing negative ions by arranging in the path of the air a wire-shaped, high potential electrode near a grounded plate (Col. 1, line 59-62).

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The advantage of producing negative ion is to purify the air as well known in the art.

Therefore, it would have been obvious at time of the invention to install ion generator of Aron in the air cleaner of Chiu et al in order to attain the above-cited advantage. Also, it would be obvious to have ion generator being in top housing, discharge hose connected to the ion generator to be exposed from one side of the controller to the outside because of the rearrangement of parts. *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IVES WU whose telephone number is (571)272-4245. The examiner can normally be reached on 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Examiner: Ives Wu

Art Unit: 1797

Date: December 11, 2008

/Duane S. Smith/
Supervisory Patent Examiner, Art Unit 1797